



Journal 2014

The Great Orme Exploration Society



GOES

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Hello Readers,

Welcome to the 2014 edition of the Great Orme Exploration Society Journal. Having been newly recruited as Journal Editor at the AGM in April, I now realise that it is not a simple task. To speed the process I have unashamedly drawn heavily on the layout created by Debbie Wareham the previous Editor.

Two of the articles in this edition, begun several years ago, are previously unpublished. The Penmorfa Chronicles recounting our adventures between 2011 and 2013 will be brought up to date next year.

Many of the Society's recent activities and achievements are not documented in this edition for which I apologise. In 2015 a more current and comprehensive Journal will be attempted, contributions towards which will be greatly appreciated.

Regards

Dave Wrennall – GOES Journal Editor 2014

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GOES meets informally every Thursday evening in The Snowdon, 11 Tudno Street, Llandudno from 9.30pm. <http://www.the-snowdonhotel.co.uk/> All are welcome.

The Great Orme Exploration Society (GOES) was formed in 1985 and became a Company Limited by Guarantee and not having a share capital on 7th April 1999. It is a member of the National Association of Mining History Organisation (NAMHO), British Caving Association (BCA), and works in association with the Gwynedd Archaeological Trust (GAT), the Early Mines Research Group (EMRG) and the Gwynedd Bat Group (GBG). Views and opinions expressed are those of the author(s) and not necessarily those of the Society.

Front Cover: Elin Wrennall abseiling down the 'Internal Shaft' in Penmorfa

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Contents

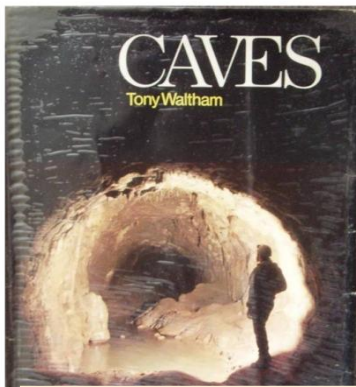
An Excursion into Carlswark Cavern		p.4
Cerro Rico: The Rich Mountain		p.14
Lower Treweek's Update		p.18
The Penmorfa Chronicles	2011-2012 Onwards and upwards	p.20
	2013 'Over the Moon' and beyond	p.26
Llandudno Victorian Extravaganza		p.31

An Excursion into Carlswark Cavern

(Investigating a miracle)

The journey begins...

Following the death of Billy Davies, a founder member of The Great Orme Exploration Society, on 30/12/2009, I became the grateful recipient of one of his books 'Caves' by Tony Waltham. Published in 1974 this well crafted volume with its systematic examination of cave types, their formation, features, biodiversity and uses throughout the world, together with an enthusiastic insight into their exploration is brilliantly illustrated with photographs, many being Waltham's own. The book was to set me on an unexpected and unusual course, researching a piece of British caving history. This article is dedicated to Bill's memory.



Caves by Tony Waltham

On numerous occasions over the years I had come across the remarkable story of a teenager 'lost' in a cave whilst diving through a water-filled passage (sump or siphon) and presumed to be dead only to be discovered 'safe' in a pocket of air by rescue teams. The story, which has entered caving folklore and given rise to many variants; as to where it took place, how far he swam, whether he was lost or took the wrong turn, appeared on p76 of Waltham's book.

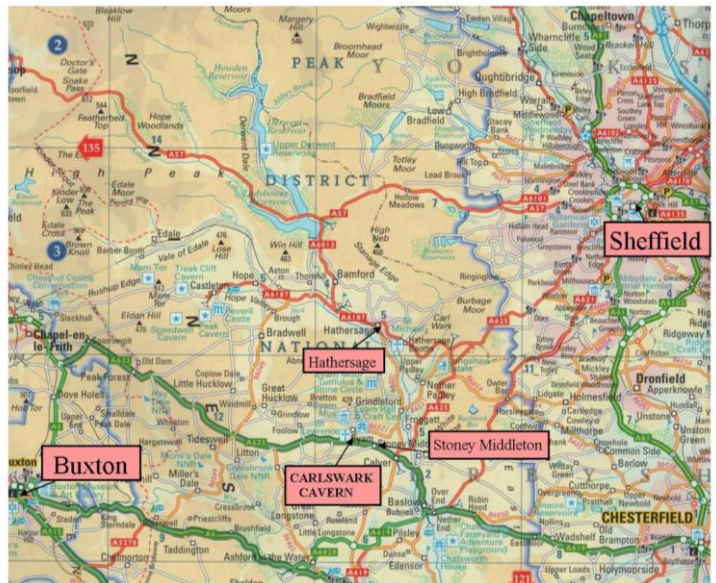
Waltham gives the venue as Carlswark Cave in the Peak District. Some army cadets were lost. One of them, 16 year old John Stevens, dived into a flooded tunnel searching for the way out. Without a waterproof lamp he swam in total darkness for '120ft', *'to emerge in a tiny airspace – where he then stood on a boulder shivering with cold and too terrified to go*

onwards or back. Meanwhile the others in his party found the right way out of the cave, and went for help. The cave rescue teams – made up of all the local experienced cavers – turned up; and they felt sure they only had to look for a body'. A diver fails to find anything and so a decision was made to lower the water level. After a night's pumping there was finally an airspace right through the passage and they could hear Stevens whistling at the other end. 'It wasn't long before he was out and surely one of the luckiest people in the world'.

The web....

I wondered if the internet might provide further details.

The story appeared in an article entitled 'A Century of British Caving' by Ric Halliwell of the Craven Pothole Club. Written in 2000 it lists the most notable events of the previous hundred years. *'The longest free dive in Britain was achieved when a young army cadet (John KP Stevens) took a wrong turning in a Carlswark sump and managed to keep going until he found a small air-bell after 21m. (68ft). He was found after a major pumping exercise'. Ken Pearce (1932-1992) the cave diver who*

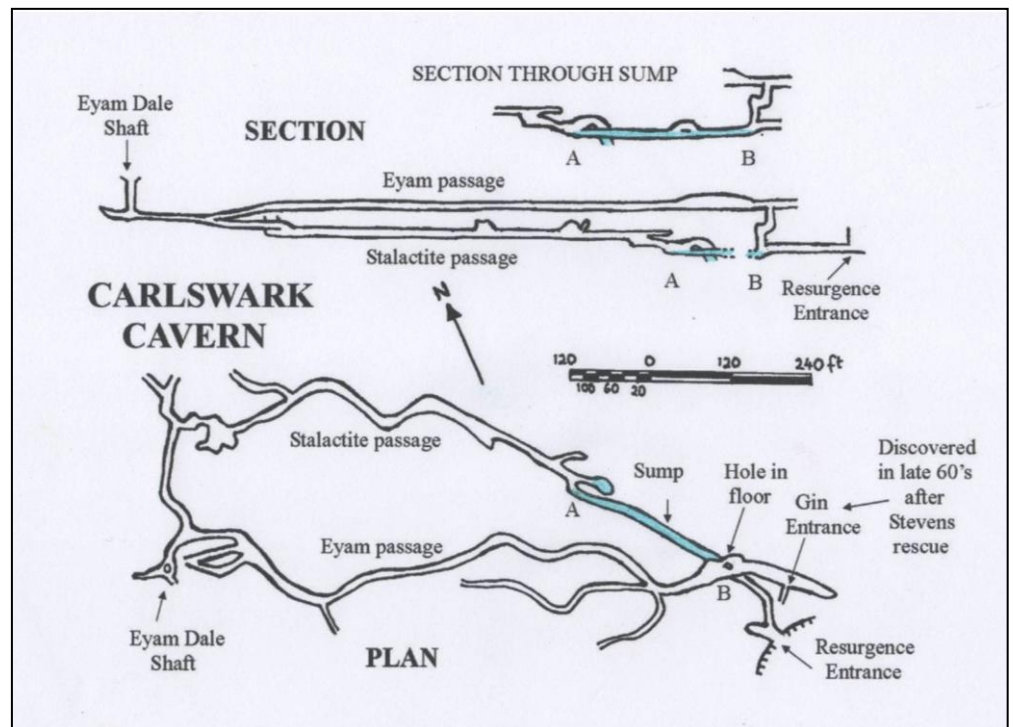


went looking for John can be heard telling the story of this extraordinary rescue on the British Caving Library's archive: <http://caving-library.org.uk/audio/list.php> This wonderful assortment of caving recollections is brilliant; close your eyes and enjoy the adventures. Ken recalls his dive; the cave had been thoroughly searched, but there was no sign of the recruit. His candle still lay at the start of the sump. He must still be in there. Ken searched the '80ft' long water filled tunnel to its end at a slight widening and was surprised to find no body. A 10 inch break in the roof was too tight for him to squeeze through but he could feel an air pocket. He returned to the team and informed them that the passage needed draining.

The web also led to 'ukCaving.com' and a forum entitled 'worst case scenario'. Apparently the full story had once been on the Derbyshire Cave Rescue Organisation (DCRO) web-site and was remembered as being much the same as Waltham's description. (There was also the transcript of a newspaper article from 2001 but more of this later).

Local knowledge....

I asked myself how had Stevens got 'lost'. Having never visited Carlsward Cavern I felt hindered in my understanding of the situation. Fortunately I knew two people living in the Buxton area, both active cavers, Dave Baines and Nigel Nix, who would undoubtedly be familiar with the nature and layout of the cave and possibly knew more of the story. Contacting them



resulted in several surveys and a copy of the missing article once on the DCRO web-site, written in 1998 by Dave Allsop who had led the rescue on that eventful night in 1965 when Stevens was saved. Through the DCRO web-site I contacted the present Secretary and was given Dave's phone number. The article is reprinted here in full with his permission.

The 1965 Carlsward Cavern rescue

An account of the epic rescue of a young soldier from the lower level sump.

This rescue of a young soldier from Carlsward is perhaps the most dramatic rescue DCRO has ever had to deal with. In describing the rescue I have used notes from the time, press cuttings and memory. Certain timings etc may not be 100% accurate.

I received the call out on Wednesday July 7th 1965 at approximately 5pm and immediately contacted the Buxton Team 'C' members of the Eldon Pothole Club. We arrived at Carlsward within the hour. We were informed that a 16 year old junior soldier, Private John Stevens of the Junior Leaders Training Regiment Oswestry, had entered the sump at the entrance end of Carlsward and hadn't been seen since.

On checking the sump, there was only air space for a few feet, and then it became completely flooded, so it was at its 'normal' level. The sump had only been passed by three members of the Eldon Pothole Club and myself during the drought of 1959. On this occasion there was a slight airspace along its 300ft length, enabling us to do the through trip.

I entered the sump for an initial probe, going feet first underwater for approximately 25ft. There was no sign of a body. We returned to surface to discuss tactics. It was decided to send a team to the far end of the cave, and check the other side of the siphon, in case a miracle had happened and the boy had managed to get right through.

We were of course 'grasping at straws' and were already of the opinion the soldier must have drowned. However, we couldn't possibly believe this until all efforts had been made to find the victim, or recover his body.

The search team reported that they had found no evidence the soldier had gone through the sump and he was nowhere to be found in the cave. I had in the meantime, been discussing the situation with the officer in charge of the party. He informed me the soldier had been on a training exercise and with a small group of others had entered Carlswork on an initiative test. They were clothed in army denims, sweater and boots. They were not wearing helmets and carried only candles for lighting. During my probe into the siphon, I'd found a candle in the water, we therefore had to presume he now had no lights.

I had in the meantime decided we would require a diver, to check the sump. I'd sent a message via the police to contact Ken Pearce, who at the time lived at Chapel-en-le-Frith. They had been informed that he was climbing at Stanage Edge, Hathersage so a Police vehicle, complete with loudhailer was dispatched. Ken was eventually contacted and having collected his diving gear arrived at the scene. I was able to describe to Ken what I could remember from the 1959 trip, particularly, that there were one or two sizable air spaces which it might be possible he could have found. Ken made his first dive, life lined from the start of the siphon, he returned after a few minutes to inform us he had found nothing and had been stopped by a boulder choke that was too tight to allow him and his bottles to enter. We checked the diving line and concluded he had dived nearly 90ft.

We couldn't believe anyone could have dived this distance with one breath of air and through so tight a tunnel. Ken was so adamant he had words with the officer to make sure there was nothing we should know about. Convinced the boy had entered the sump, Ken made a second dive, this time more slowly, covering the right wall going in and the left coming out, again he was stopped by the boulder choke.

Ken was now extremely cold and running low on air, it was decided there was no point in continuing with the diving. It was therefore considered to look into the possibility of pumping the sump, thereby lowering the water level. The fire service had already been called but on arrival their equipment was considered unsuitable for the situation. Earles Cement were then contacted who in turn made available a pump. Before it left Earles it was wound 25ft into the air to check if it would lift the required head of water. On arrival at the cave, this again proved unsatisfactory because of its size.

We then had a little bit of luck. A workman from Glebe Mines, slightly the worse for drink if I remember, had seen the commotion and came to see what was happening. He informed us that there was a new type of electric pump in Sallet Hole Sough, which would be ideal for our needs. This was duly sent for together with a generator from the Safety in Mines in Sheffield.

The generator had seen better days and refused to start for some time, with everyone, including Ken Pearce having a 'swing'. It was not until Harold Lord's alternator, Land Rover, skill and patience were all employed that pumping finally commenced. Great care had to be taken as the pump was 3 phase, 440 watts with quite a few joints along the required

length of the cable. Being an electrician by trade this was my department and the safety of the team had to be paramount.

The Fire Brigade supplied hoses and these ran down to the road. The centrifugal 'bomb shaped' pump was eventually placed into the sump and pumping began. It was now into the early hours of Thursday morning and the boy had now been in the cave for 8 hours. The pump proved to be very efficient and soon water was flowing down the Stoney Middleton Road. A telephone link had been established from the cave to the surface and to the road. As the level of the sump dropped and also its length lessened, the message came through to stop the generator while the pump was placed further into the sump. This procedure was carried out for the next few hours with everything going very efficiently, but with the sump being over 300ft long there was a lot of water to be pumped.

At approximately 4am Thursday morning a message came from Clive Downhill, who was monitoring the pump progress, to switch off the generator. Clive thought he had heard a whistling sound, but he couldn't be sure over the noise of the pump. Having stopped the generator, I went to the sump accompanied by John Needham and Dr Hugh Kidd. We noted there were a few inches of air space along the sump length and I shouted loudly 'Is anyone there?' A muffled cry came back, the miracle had happened, the boy soldier was alive, having been in the sump for nearly 12 hours.

John, Hugh and myself entered the sump carrying a bag containing an exposure bag, flask, helmet and light etc. which had been waiting for such an eventuality. We progressed forward slowly, so as not to create any waves and all the time talking to the young soldier to reassure him.

We arrived at the choke that had stopped Ken, approximately 90ft in. At this point we couldn't see John so I shouted to him to throw something into the water. This he did and we saw a splash just in front of us. Looking up into the very limited air space we saw him looking down on us. He certainly looked a sorry sight; he'd pulled his beret down over his ears and his sleeves over his hands, and was of course, shivering extensively. We managed to get the exposure suit on him and gave him a hot drink. Surprisingly, he was in a remarkably good spirit, and talked to us quite intelligently. He asked us if a diver had been in the sump as he'd heard his bottles 'clanking' on the rocks, ironically only a few feet from him. He said he'd considered diving back out at this point, but he couldn't get his bearings, so decided not to. He had heard the throbbing of the pump for a few hours and guessed we were pumping the sump out.

We decided a stretcher was not necessary or very feasible and John felt quite confident he could make his way out with minimum assistance. We therefore gingerly made our way out of the siphon and encountered no problems during the return to surface.

As can be imagined, the press were having a field day and even though it was approximately 5am, there was still a large contingent of reporters and photographers waiting for John's exit. He confidently posed for pictures and answered questions until Hugh Kidd insisted he should be transported by waiting ambulance to Buxton Hospital. He was found to be in excellent condition despite his remarkable ordeal and was only in hospital 24 hours.

And so ended a miraculous rescue with a most surprising, but rewarding outcome. The record will show that Private John Kenneth Paul Stevens aged 16, dressed only in denims and sweater with no helmet or light, taking one breath of air, dived 90ft into a water filled passage. He then sat for 12 hours waiting to be rescued, having found in complete darkness the only airspace available. He was rescued by members of DCRO with no apparent ill effects, and he passed his initiative test!!

David G Allsop, June 1998

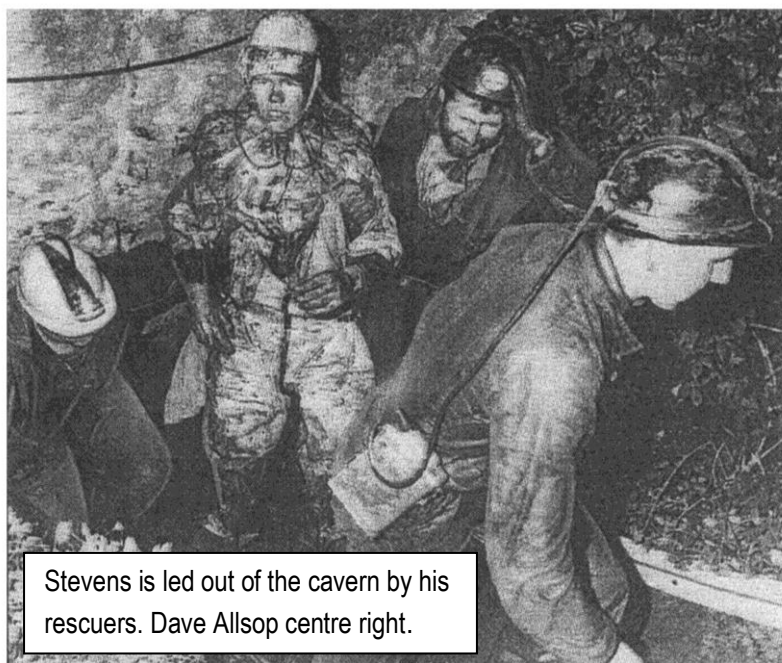
A reunion....

My initial trepidation over phoning Dave had soon been eased by his warm and friendly manner. He was keen to help me understand the events of that night and happy for me to use his article. He also told me of the heart-warming, surprise reunion that had taken place in 2001, 36 years after the miraculous escape, between John Stevens and his rescuers. John was then 52yrs old and working as an electrician in Welwyn Garden City but it was his daughter Ceri Murray that had instigated events. Apparently the family's original newspaper cuttings had been lost in a fire and she had been uncertain of the facts, but on the internet she came across Halliwell's article 'A Century of British Caving' with details about a boy doing the longest cave dive in 1965. She assumed it was her father. She also came across Dave's article on the DCRO web site. A few letters later and a surprise reunion was arranged.

Eventually John Stevens and his family arrived in Buxton, supposedly there to visit relatives. Whilst awaiting them in the Duke of York pub he had a tap on the shoulder and turned round to find Dave introducing himself as a member of DCRO. As the other members of the rescue team were revealed John was stunned, remarking 'It's not often I'm speechless'. Over the weekend he was taken back into Carlsark to be shown the scene of the rescue, a return that merited further press interest. From his personal scrapbook Dave was able to present him with copies of the original newspaper articles from 1965. Since this surprise reunion Dave and John have become friends and still stay in touch.

Those newspaper articles....

Dave offered to send me copies of all his newspaper cuttings which duly arrived. These twenty or so cuttings form the basis for the rest of my investigation, filling in details and perhaps going some way to explaining why Stevens got 'lost' at all. They are easily divided into two groups, articles from newspapers in 1965 and articles written after the reunion in 2001. (One of which I referred to earlier, as having being on the internet). Whilst it is important not to believe everything you read in the papers, the consistent differences found within the two sets of reports could perhaps hold the key to explaining why the army initiative exercise went so badly wrong.



Stevens is led out of the cavern by his rescuers. Dave Allsop centre right.

1965 papers, immediately after the rescue....

Manchester Evening News: Sat up in hospital

John (6 foot, 11 stone, ginger-haired from Edmonton London) told how he became trapped after leading his 4 man squad into the cavern 'Our entrance into the cavern was straightforward and quite easy. Then I must have taken a wrong turning and came to a tunnel full of water. I am a strong swimmer underwater - I can do more than 110ft quite easily - so I plunged in to see how far the water went. I just swam on and on under the water, my head was touching the roof so I couldn't come up for breath. Then I came to this spot where I could get out of the water, a sort of crevice where I could pull myself up and sit down. I tried to climb further up but I found that it was impossible' 'the last time I woke up I suddenly heard noises of men talking and a machine pumping water. I whistled as loud as I could and someone whistled back. Then I saw a light it was a wonderful moment'.

Sheffield Telegraph July 8th: They hadn't got a map with them. They had been told verbally where to go down the cave but

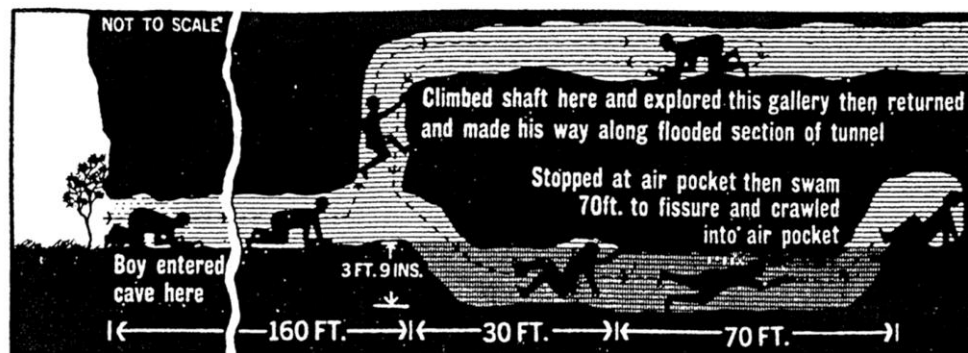
were often uncertain of the right turnings to take.

Daily Sketch July 9th: He was leading one of two squads of boy soldiers.....both squads were to meet in the cave but John took the wrong turning. He came to a water filled tunnel, but rather than turn back he decided to swim underwater to find another outlet.

Guardian July 9th: 'I was told which way to take my squad but must have taken the wrong turning and came to a tunnel full of water..... I am a strong swimmer underwater so plunged in to see how far it went'.

Daily Mirror July 9th: 'We went into the cave in squads of four or five with candles and matches. When we reached water I went to explore it because I am a good swimmer'. (The paper records that John was the swimming champion of his battalion).

Daily Express July 9th: This paper indicates that Carlsark was the second cave to be visited that day. There is a drawing explaining the incident indicating the soldiers were expected to climb the shaft next to the sump, and explore the upper galley before returning the same way. Stevens states that he was on his way out of the cave when he dived into the sump, and that the squad leader suggested it. **(In all the other papers he describes himself as the squad leader).**



JOHN STEVENS' JOURNEY UNDERGROUND

This Daily Express diagram helps to explain the situation underground, - but no air-space existed at 30ft.

'I was in a squad of 4. After going through the main passage, we were on our way back when we came to the water filled tunnel. The squad leader told me to keep going and explore it because I am a strong swimmer, particularly under water. I expected to find an air pocket after a yard or two, but there wasn't one, so I just held my breath and swam on and on'.

The following quotes testify to John's confidence.

Daily Mail July 9th: 'I could still have gone a little further when I came up into a crevice. I have swum 120ft underwater in the baths. I would never turn back'.

Guardian July 9th: 'I was always confident help would come. I was never really scared'.
'This experience has not put me off. I shall be quite prepared to go down again'.

The Sun July 9th: 'Without boasting I could have gone further'. This escapade 'won't put me off adventure training, life

comes as it comes'.

Although Stevens was able to walk out of the cave with just a few scratches, he was clearly suffering from shock and symptoms of exposure. In total darkness, wet and cold, he had only been able to keep out of the water by wedging himself awkwardly between rocks in a crouching position for 12 hours, with 'a freezing draught blowing from somewhere'. To alleviate leg and stomach cramp and offset shivering he occasionally attempted, without success, to climb further up. Eventually he became semi-conscious and slept for long periods; his first question on being found was 'what time is it?' He thought he had been there about 3 hours. (He wore no watch).

The Army's perspective on events (1965)....

Derbyshire Times July 9th: He was one of 37 young soldiers and eight officers who had spent several days camping at Hathersage. Half had been climbing and the others potholing.

'These lads have been trained to be self-reliant and level-headed. John must have remembered his training'.

Derbyshire Times July 16th: Some were critical of the Army for allowing such a situation to arise, and considered that the supervision inside the cave must have been inadequate.

The Army Authorities have assured us that the officer in charge of the whole party was a very experience potholer, but it was admitted that the officer in command of the party inside the cavern had very little experience of caving. There appears to be absolutely no truth in the rumour that the boy was ordered into the sump by his team leader. It is understood that the boy has said that he went into the passage on his own initiative and by mistake.

'This is the one really dangerous spot in an otherwise fairly safe cave system. If an officer or NCO had been posted at the entrance to the sump, the unfortunate incident could have been avoided. If the Junior Leader Battalion comes to train in the Peak District again - as we hope it will - the officer commanding should remember that boys inevitably poke their noses into the most dangerous spots on mountains and down potholes. The Army has used this cave for training many times and it may be that familiarity bred contempt, that is an attitude that can kill on a rock face or down a cave'.

Daily Sketch July 9th: After visiting John in hospital last night Captain Keith Lumsden who was in charge of the 36 boys on their three-day training course said:

'He went through a tough experience and came through it very well'.

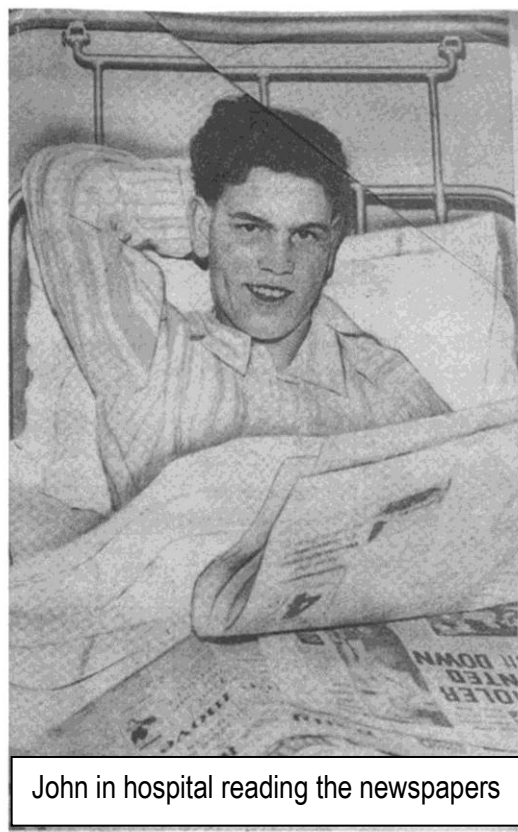
'He is an extremely strong and level headed young man'.

Daily Mail: July: Gives Capt Lumsden's age as 28yrs.

Major Duncan Gregory, information officer at Western Command Headquarters at Chester said; 'According to regulations these lads should have been issued with carbide lamps or torches. Helmets are optional'.

'They should have been wearing at least combat denims over wool sweaters'.

'This trip has been done hundreds of times without incident. It takes a good team about 20 minutes; an average time is about 45 minutes'.



John in hospital reading the newspapers

'But for exceptional drought conditions this gallery would never have been uncovered'

(This is contradicted by Dave Allsop who remembers it as 'at a normal level' with no air space at all).

2001 papers, after the reunion....

Daily Mail Sept 4th: John now an electrician, who lives in Welwyn Garden City, was stunned to meet his rescuers and to return to the cave. Dressed in a new pair of bright orange overalls and helmet, he went back underground at Carlsark Cave to the watery sump where his epic dive started. 'I didn't realise how lucky I was' said John. 'Going down there brought back a few ghosts and the memories of exactly what happened. You forget the arrogance of the people who controlled us. The guy had to be off his trolley to send a 16-year-old boy down there. I had been in three times. I kept coming back to say it was flooded and he said it couldn't be and to get back in there'. 'The only reason I survived was I swam for the Army. Every morning I would swim two lengths underwater as my first bit of training'. 'That whole experience changed my attitude to people in authority. From that day on, I questioned if they were telling me the right thing to do or not'. 'There was an Official Enquiry, but I wasn't even invited. They paid for me to go away with my sister and when I got back I was transferred very quickly'.

Even after all these years, Dave is amazed John survived. 'It might be the most remarkable dive in history – I knew the passage, so I thought we were looking for a body. But instead we found someone quite cocky, saying he was contemplating swimming back'.

Manchester Evening News Sept 4th: The 16 year old had been ordered to plunge into a water-filled passage with no exit during a training exercise.

Welwyn and Hatfield Times Sept 12th: Little did young cadet John Stevens realise as he plunged into the muddy and icy depths of Carlsark Cave, he would spend the next 13hrs on a tiny underground ledge, drifting in and out of consciousness. He had simply followed orders from an inexperienced officer.

...being the strongest swimmer in the group he was ordered to clamber into a water-filled pothole and find a way through the maze his colleagues could follow.

John told the WHT: 'The officer sent me down the hole first, it was full up with water so I came back. He then told me to go back and I went a bit further, came up for air and he told me to go back again'. 'This time I couldn't go back and just carried on swimming, 90ft under water'.



Back again 36 years later

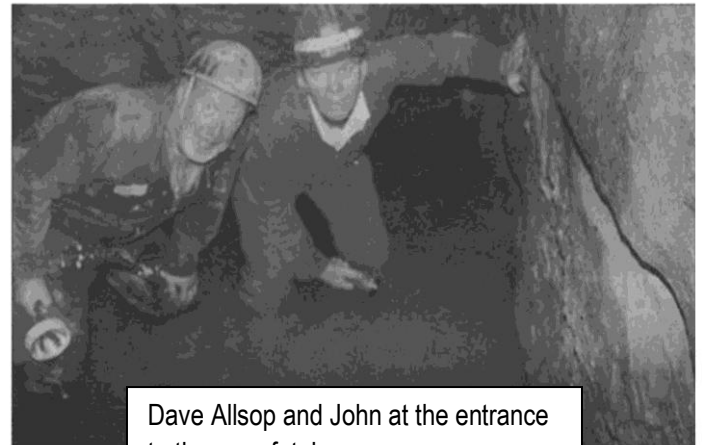


John reunited with his rescuers
in Carlsark Cavern

Drawing a conclusion....

Whether the infamous dive occurred on the way in, or on the way out after completing a planned rendezvous with another squad on the upper level, there are clearly conflicting accounts of exactly how Stevens ended up 'lost' in the Carlswark sump.

In all the articles from 1965, apart from one, he is said to be leading his squad and seems to have dived into the sump either in error, whilst looking for the exit, or perhaps out of choice; a confident youth displaying a spirit of adventure and bravado.



Dave Allsop and John at the entrance to the near-fatal sump

An error seems unlikely; even with just candles the route out, through which they had already passed, should have been obvious enough, possibly even having a flow of fresh air.

In the articles following the 2001 reunion, there is a strong emphasis on being ordered into the sump by a superior officer, - who seemingly had little experience of caving. Again, this may have been a genuine error whilst seeking a way out, a malicious use of authority, or a bout of foolish goading. Whatever the reason, in 1965 Stevens would understandably have been very reluctant (even under orders) not to mention that he was sent into the sump, at a time when he wanted to pursue a career in the Regular Army.

Members of the rescue team, always uncertain of the exact set of circumstances leading to the incident, were just delighted to have had a successful outcome and were content, and still are, to accept Stevens' story of being ordered to dive into the sump.

As to the outcome of the Official Inquiry into the episode, whilst the findings might be available under the Freedom of Information Act, publication of them might not be possible without permission. In any event, even if an enquiry was forthcoming there is still no guarantee that the details provided would be correct.

Visiting time....

In March 2012 I called in to see Dave Allsop at his house in Buxton. He was as expected extremely interesting to talk to, full of many anecdotes and stories, with a fascinating scrapbook of his many exploits. A few days later, 19th of March, I was entering Carlswark Cavern, alone, with a candle to help replicate the 1965 incident.

Confusion came sooner than anticipated. Eventually I realised that I had entered the upper Gin Level by mistake! (This had been opened in the late 60's after the Stevens rescue). Following some exploration and with recourse to headlamp I dropped down the awkward slippery 'shaft' to the infamous sump. There was no air space, the water level several inches above the uninviting tunnel. However in the opposite direction, south towards the lower exit, there was an obvious short duck, with a 9 inch air space. Not wanting to get too wet I easily avoided this by clambering up a metre and passing through a rock window on the right. With more people in the vicinity this easier route should have been apparent even with candlelight. Relighting my



Carlswark Cavern.
Lower (Resurgence)
Entrance

candle I crawled out to daylight in just four minutes.

The Army had stated the initiative exercise 'takes a good team about 20 minutes; an average time is about 45 minutes'. I conclude that there would be time to climb up into the upper passageways for the suggested rendezvous of squads but that the shaft would be difficult, requiring combined tactics or, for safety, a rope or ladder, of which there has never been any mention.

Another logical underground meeting for two squads would have been for one team to have entered the upper gallery by descending the Eyam Dale Shaft. Again none of the accounts have suggested this was the scenario, such a trip, with candles, would be much less likely.



Further insight?....

In the early seventies Dave Allsop was again involved in the search for a lost teenager in Carlsark, a member of a party doing the through trip from the Eyam Dale Shaft. After climbing down to the lower series the boy had gone into the sump whilst looking for the way out. On this occasion Dave's method of searching the water feet first located a body. It was a tragic accident highlighting the possibility of confusion at this particular location, where a bad decision through disorientation, misunderstanding or poor judgement can have fatal consequences. If it was a mistake which led to Stevens swimming into the sump, then sadly it wasn't the last time it would happen.

Completing the circle....

I started this article wanting to know more about one of Britain's historic caving events. My journey has taken me via books, the web and newspaper articles to the actual place and the people involved, it has been a memorable, satisfying and enriching experience. I've been left with the realization that perhaps only one person really knows what happened at that Carlsark sump in 1965, but that it is the fact that he actually made that amazing dive, in total darkness and was eventually to have a miraculous escape, thanks to the skill of his rescuers that is the real story.

There is one final piece of the jigsaw that falls into place. Dave Allsop had been part of the successful 1962 British expedition to the Gouffre Berger near Grenoble in the French Alps, where it had broken the world potholing depth record, reaching -3,681ft. Soon after, Tony Waltham then a student of geology at Imperial College invited Dave down to London to give a lecture on the expedition which he duly did, no doubt inspiring many young cavers, Waltham amongst them. Dave was then instrumental in gaining permission for one of the college's subsequent foreign caving trips to the Trou-de-Glaz in the Pyrenees. It seems that Billy's book not only set me on a path to experience Carlsark Cavern and meet the leader of Stevens' 1965 rescue, it had also introduced me to someone who had helped enthused Waltham in his early caving career, one which would eventually lead to its own publication.

Dave Wrennall 2012



Cerro Rico The Rich Mountain

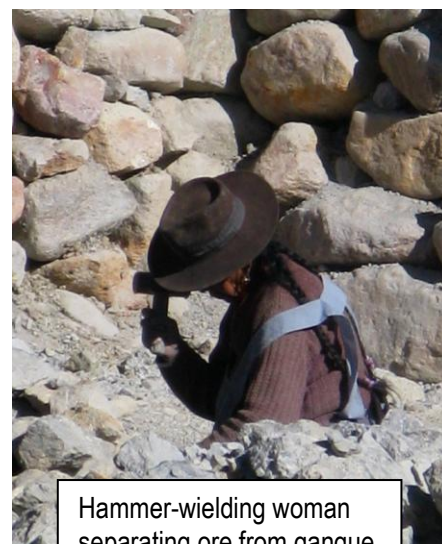
Introduction

Bolivia is a landlocked South American country whose better-known neighbours include Peru and Brazil. For nearly three centuries it was subject to Spanish colonial rule, but it gained its independence in 1825. The lofty Andes mountains run through the western side of the country, and thus many Bolivian cities lie at high altitude. Although Bolivia is located within the tropics the highlands can get very cold at night, and indeed my first, early morning view of the country when I visited in July 2013 was of the arid landscape around La Paz international airport blanketed in snow.

The highest city of all in Bolivia is Potosí at a nominal altitude of 4090 metres, at which there is a noticeable reduction in atmospheric oxygen and where walking uphill requires serious effort on the part of the newly arrived visitor. Potosí owes its existence to the mountain up whose northern flank it has been spreading for the last four hundred years: Cerro Rico, or Rich Mountain in English. The Andes are young mountains, and Cerro Rico is formed of igneous rock with widespread mineralisation having occurred on fault lines roughly thirteen million years ago. There is a variety of ores extending to a depth of 1km which yield, or have yielded, primarily silver, lead, zinc and tin with smaller quantities of other metals such as copper and antimony. The summit of Cerro Rico is approximately 4820m above sea level; it is believed that before the Spanish conquest in the sixteenth century the mountain was considerably higher than this, but the top has been subject to several spectacular collapses, most recently in 2011, due to continued uncontrolled mining.

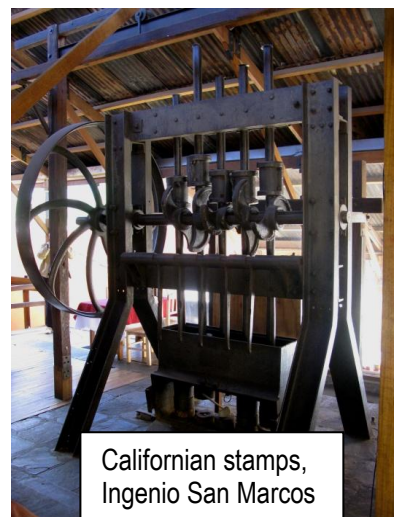
History

It is possible that small scale mining took place on the surface of Cerro Rico in pre-Inca times. The Inca Empire, which spread beyond modern-day Peru to neighbouring countries and included the highlands of what became Bolivia, was noted chiefly for its mining of, and extravagant use of gold, but the Incas also worked other metals and are believed to have known of the silver deposits visible on the surface of Cerro Rico. However it was not until the beginning of



Hammer-wielding woman
separating ore from gangue

the Spanish colonial period in the mid sixteenth century that the silver began to be mined on a large scale and in an organised fashion and the mountain became denuded of vegetation and pockmarked by adits. It soon became obvious to the Spaniards that there was immense wealth within the mountain. Reservoirs were constructed in the hills surrounding Potosí, and an elaborate system of leats brought water down to the city to power the water wheels in the many dressing mills which were springing up on the periphery of Potosí. Labour for the mines was provided by a combination of a voluntary paid workforce, slaves imported from Africa, and adoption of the Inca *mita* forced labour system whereby indigenous communities ranging geographically from Cusco (Peru) in the north to northern Argentina in the south were obliged to supply one seventh of their male workforce at any given time. The work was arduous and the working conditions appalling, and it is believed that several million miners met their deaths as a result of injury or industrial disease during the colonial period. Most of the silver was transported by pack animal to the Pacific Ocean coast from where it travelled by a circuitous route to Spain.



Californian stamps,
Ingenio San Marcos

The city centre prospered and expanded in parallel with the mines, and Spanish colonial architecture is still much in evidence today, as exemplified not only by the many churches but also by private houses. The most remarkable of these colonial buildings is the second incarnation of the Casa Nacional de Moneda de Bolivia (the Bolivian National Mint) which dates from the mid eighteenth century and was in use for almost two hundred years. It is now a museum but has retained the original machinery including enormous wooden rolling mills, using oak beams imported from Europe, which were powered by mules or African slaves kept on the lower floor of the building.

The majority of the easily accessible high grade silver reserves had been worked out by the beginning of the nineteenth century and subsequently tin, which tended to be found at a greater depth, became the main product. Mining continued after Bolivia gained independence in 1825, with technical expertise being sought more from the United States than from Europe. This period was marked by the rise of home-grown “tin barons”, unrest by mine workers, and the spread of unionism. After a revolution in 1952 the mines were nationalised, and the national mining corporation COMIBOL, although subsequently privatised, still retains some control over mining in Cerro Rico and smelting at Potosí.

Today

The city of Potosí along with the mining landscape of Cerro Rico was inscribed as a UNESCO World Heritage Site in 1987. However there is an ongoing conflict of interest between cultural heritage and working mines as has been seen elsewhere in the world, for example in Cornwall. UNESCO has expressed concern at the instability of the top of Cerro Rico. Meanwhile COMIBOL, the Bolivian national mining corporation, has issued leases to thirty seven cooperatives which between them operate about two hundred small mines on the mountain. As the top part of the mountain became depleted of high grade ore work moved further underground, and there are now approximately thirty floors of mine workings, some still accessed via well-built Spanish colonial adits.

Nowadays there is limited mechanisation in the mines. Compressed air is used for drilling and air pipes can be seen snaking into the adits from external compressors. A combination of dynamite and ammonium nitrate is used as explosive with metre-long fuses (lit from a naked flame) giving miners approximately five minutes to evacuate the blast area. These explosives are readily available from roadside stores in Potosí not only to miners but also to tourists! Barrow ways are used to transport ore to underground loading points for the 500mm gauge tramways on which side-tipping wagons are typically handled by three men. On the surface there are more tramways leading to various tipping points for ore and waste, and I

also observed an aerial ropeway though it appeared to be disused. Ore is transported from the ore bins by truck to processing plants in Potosí, and thence to a large smelter constructed by COMIBOL on the outskirts of the city.

There are said to be in the order of fifteen thousand miners on Cerro Rico, some of whom are children who manage to earn money for their families by working underground on a part-time basis while still attending school. Despite mechanisation the work is still arduous with pervasive silicosis-inducing dust and temperatures varying from freezing on the surface in winter to 40°C deep underground; the miners chew coca leaves to help combat the combined effects of altitude and strenuous labour. Life expectancy is about forty for these miners. Superstition is rife, and each adit contains a crude statue of “El Tio”, lord of the underworld, to whom the miners offer cigarettes, coca leaves and 96% alcohol (all readily available in Potosí) before starting their day’s work. Occasionally a llama is sacrificed and the blood smeared at the adit entrance and around the statue of El Tio. Women do not work underground, allegedly because it is feared that Pachamama the Andean earth goddess would be jealous of them being close to El Tio; however they can be observed on the surface breaking ore with hammers, much as the Copper Ladies of Mynydd Parys did two hundred years ago.



Skip wagon on waste tip

Tourist excursions into the Cerro Rico mines are operated by several local companies and, as for mine trips in North Wales, range from cultural experiences in museum adits to strenuous adventure tours descending three or four floors underground. The difference with Wales is that the Cerro Rico adventure tours are into working mines and the visitor may encounter at first hand not only workers wielding picks or pushing wagons (at high speed) but also underground blasting operations. Tourists enter the mines at their own risk! Many of the guides are ex-miners who are now using their knowledge in less hazardous and probably more profitable employment.

My visit as part of a group of European tourists was on a weekday morning and started with a shopping expedition to the stores to purchase gifts for the miners we would be meeting. We were advised to buy coca leaves and large bottles of soft drinks as these would be universally appreciated whereas dynamite, for instance, was only handled by a few trained miners. Next we went to the tour company’s base to be kitted out in overalls, wellies, helmet and Oldham-style caplamp, thankfully with a lightweight battery. I was one of a group of ten people, only one other of whom had ever set foot in a mine before and some of whom were distinctly nervous about being underground, and so our visit was only a short one confined to a single level. The cooperative whose mine we visited was called Korimayu, which means Golden River, perhaps referring to an ore vein rather than to the rubbish-strewn stream which trickled past the foot of the mountain. Our vehicle was driven up a winding track past ore bins and spoil heaps and was parked near what we were told was a relatively recent (only fifty years old) working. Here we were greeted by a man who emerged from a nearby building and appeared to be a foreman and by a boy aged about eleven who was selling ore samples. The level we entered looked reassuringly familiar to me: it was barely high enough for me to walk upright, and had compressed air pipes loosely attached to the rough wall, crudely laid tramway rails, and several centimetres of water on the muddy floor. The familiarity came to an end after a couple of hundred metres in an alcove containing the seated effigy of El



Miners' supplies on sale

Tio, who was dressed in a pair of wellies (and nothing else), was endowed with a large pair of horns and an impressively sized phallus, and was bedecked in multicoloured paper streamers and handfuls of coca leaves with an assortment of empty alcohol bottles and cigarette ends at his feet. After adding to the collection of coca leaves, cigarettes and alcohol and having the symbolism explained to us (for example El Tio's fertility was measured in the quantity of ore he created) we continued along the level. Shortly after the alcove we came to a branching of the ways. To the right was a hole in the floor with a length of knotted polypropylene rope hanging down it to a lower level; this route was used for tourist adventure trips as well as by the miners. Ahead of us the tram rails disappeared into a collapse which looked just about passable to me but clearly was not going to be on the tourist itinerary. To the left was a small pile of mined rock awaiting loading into a wagon and next to it a large rubber bag which was being used as a kibble; nearby was a winze with primitive hand-powered winding gear and frayed polypropylene rope instead of cable. Beyond these the tunnel curved round out of sight. Down this passage a solitary miner was working at the rockface and transporting in a wheelbarrow the ore he had freed to add to the pile on the floor. It was now time for us to make our way back out to daylight, but after a few minutes we heard a distant rumbling noise which gradually got louder, and our guide told us to move to the side of the tunnel. Soon an empty wagon headed rapidly inbye, hauled by one man who was using a length of polypropylene rope and pushed by two others. The rest of my group of tourists were very glad to leave the mine, but I could happily have stayed there much longer watching operations and exploring.

On our way back into the city we stopped for lunch at the only survivor of the colonial mills which is still in good condition and which was converted in the 1990s into a restaurant. Even today the building of Ingenio San Marcos is dominated by the large wheelpit via which the mill was powered before the introduction of electricity in the twentieth century. Inside the restaurant circular seating areas looked as though they had once been *arrastras**, dining tables were arranged around a set of Californian stamps, and the salad bar was laid out on top of a [stationary] shaking table. Once again mining had provided the basis for diversification of employment in Potosí.



New uses for old mill equipment

The future

It is believed locally that the mountain has sufficient ore to last another 500 years, with the mineralisation extending vertically underground for over 1000m, well beyond today's operations. However the future of mining on Cerro Rico is uncertain. Much is dependent on the prices of the various metals on international markets, a factor over which the miners of Potosí have no influence. Working conditions and miners' life expectancy are not improving noticeably, and it is possible that at some time in the future the men of Potosí may decide to seek better work conditions elsewhere despite the high pay they receive as miners. Finally, the interior of the mountain is like a Swiss cheese, and the unregulated working will almost certainly result in more major collapses which will reduce the opportunities for mining.

Ange Gawthorpe October 2013

Further information

Modern working conditions and child labour are well represented in the documentary film: *The Devil's Miner*.

*An **Arrastra** (or Arastra) is a primitive mill for grinding and pulverizing (typically) gold or silver ore. The simplest form of the arrastra is two or more flat-bottomed drag stones placed in a circular pit paved with flat stones, and connected to a centre post by a long arm. With a horse, mule or human providing power at the other end of the arm, the stones were dragged slowly around in a circle, crushing the ore.

Lower Treweek's Update

Further insight....

After reading the article 'An Area Beyond 'Higher Shaft'' in the last journal, it dawned on Andy Lewis that our newly found area of extensive workings might be the same as his Location 31 which he has visited just once, sometime in the early 90's. The Flower-press certainly sounded similar to the tight crawl that was dug to gain access; removing one large rock being especially memorable for him. As with our workings the north end of the Location 31 contained fracture rock and large boulders and Andy remembers them as not looking too safe. On the trip with Andy were Tony Hammond, Nigel Bannerman and Nick Jowett. Location 31 was never surveyed, or even paced, as suggested by its dotted outline on Andy's plan. This is how he described it in his thesis.

Location 31

Early activity at this location comprises of a series of open veins with interconnected passages covering a vertical extent of around 15m. Evidence includes stone and bone implements and charcoal also a number of narrow tortuous and partly back-filled workings displaying smoothed rock profiles characteristic of early ore extraction. Links through to the 'central vein' (Location 30) are known, with workings rising to a point where possible surface derived spoil prevents further progress. Other connections to workings northwards are terminated by collapsed roof and side wall material.

This description of Location 31 with its stone and bone implements together with Andy's recollection of the awkward access crawl and the loose blocks to the north, suggest our workings are the same. Even both 'plans', drawn from memory, have overall dimensions that appear to be much the same with an access passage from GOCM curving east into the workings in both cases.

In the future it would be good to undertake a survey through the new link and establish the exact position of Location 31; in the meantime we should perhaps place it somewhere in the middle of both 'conjectures'.

No developments....

Sadly we have made no further visits to this area since its exploration in July 2011. This perhaps reflects the difficulty in getting a strong team together and the necessity for a long damp abseil, or more crucially, the wet jumars back out. The neglect might also be partially attributed to our focus having been firmly fixed on new discoveries in Penmorfa.

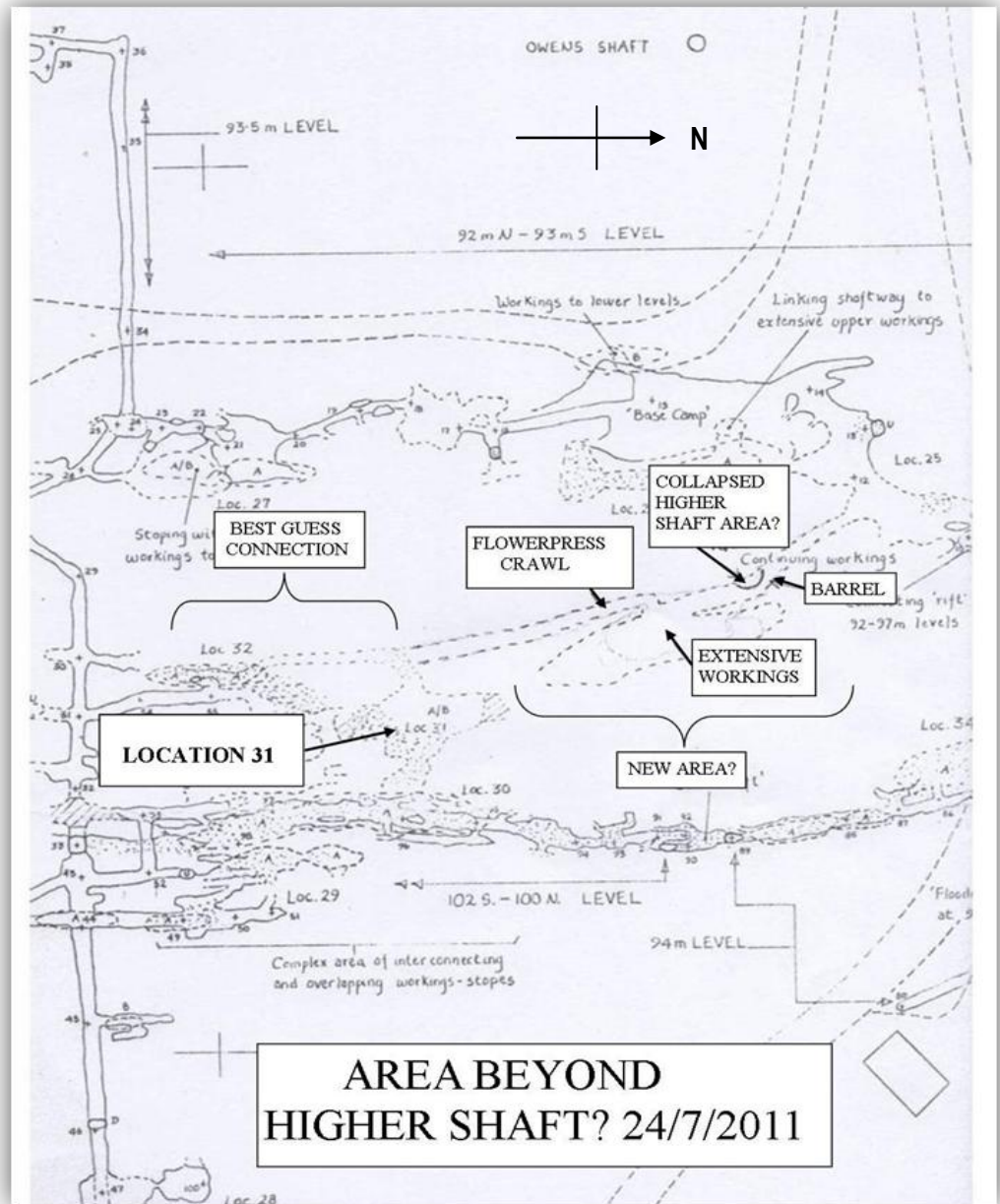
Dave Wrennall 2013/14



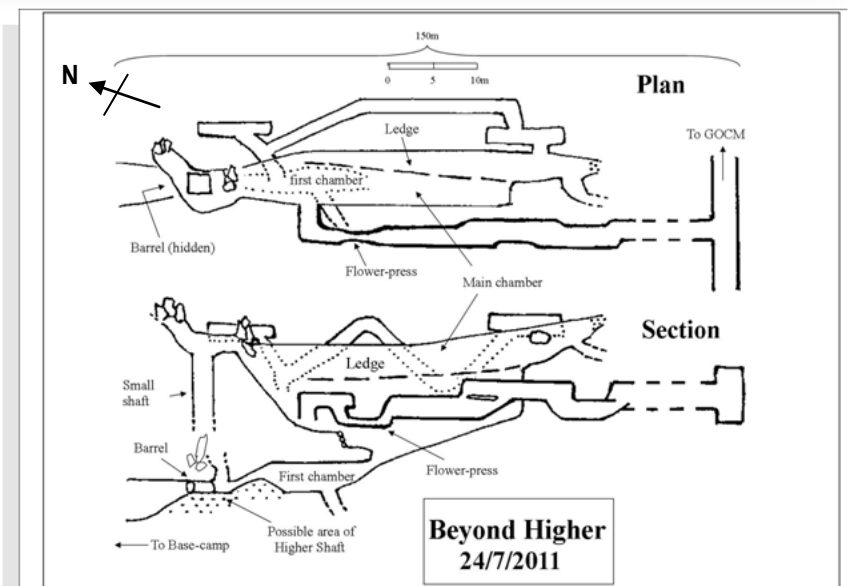
Looking back through the barrel we placed in our dig



Looking from the barrel at our 'First Chamber'



Andy Lewis' survey with our 'new area' added and Location 31 highlighted



Rough sketch of our 'new workings'

The Penmorfa Chronicles

2011-2012: Onwards and upwards in Rift Three

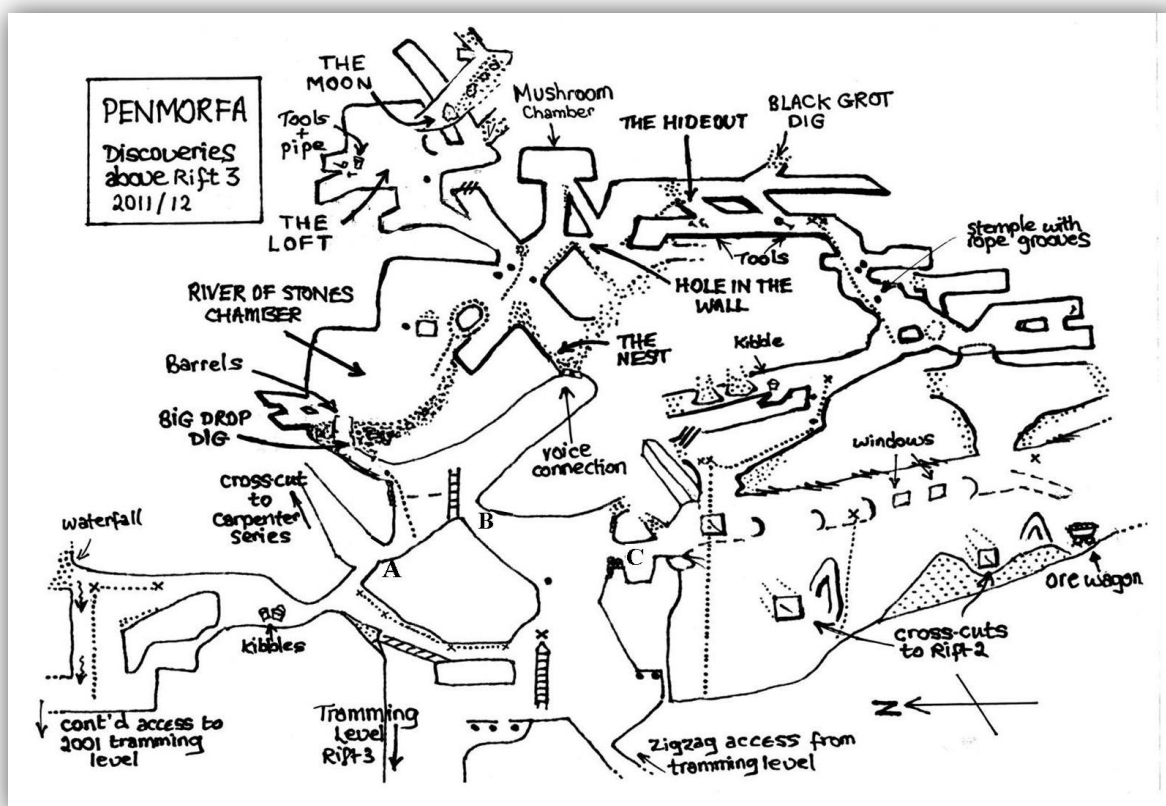
A fresh look....

At the top of Rift 3 in Penmorfa there were numerous places that running spoil and shuttered deads (waste rocks) suggested unexplored areas might exist at a higher level. On October 15th 2011, I convinced Gaz and Richie to look again at the possibilities. Whilst Brian took Debbie on a tour elsewhere, we clambered through the zigzag of tunnels gaining height just off the main working. (One of these used to be a tortuous crawl but had been opened up considerably by a party in June with just such an excursion in mind). Hanging an electron ladder made a short section of climbing easier, at least for two members of the party, before the horizontal, in situ, aluminium ladder allowed us to cross over to the various passages representing the current limit of exploration.

No water, no way....

Initially I was interested in an area just beyond the kibbles where a cascade of water emerges from an alcove of deads (In the past it had dampened those abseiling to the isolated section of tramming level discovered in 2000, a route now obsolete

due to the lower connection established through a barrel in 2010, although the ropes are still in place). Water usually emerges from a small hole packed with rubble directly above the



abseil point but on this visit we found no flow at all. Wedging uncomfortably across the drop and tied to the rope for security I was able to take a closer look. Unfortunately the rocks were calcited up and reluctant to move, even when pounded with a length of scaffold pole. After twenty minutes of contortion with minimal progress, enthusiasm waned and we resolved to look elsewhere for a breakthrough.

Big expectations....

The next area to examine had been named 'Big Drop Dig' due to the ominous rumblings that occurred when rubble was extracted from its base, suggesting a large excavation full of spoil lay above. Immediately below the dig was a chamber discovered in 2001 hidden behind several planks of wood after a scary climb up above where we had hung the electron ladder. (Point B on the sketch) These planks were clearly placed there to divert spoil through another opening (Point A). This opening was found to be blocked by a large rock and some spoil however it was easily removed to establish our regular access route. Just like the old miners before us we discovered debris thrown down through Point A found its way down to tramming level far below with minimal encouragement. An old wooden ladder found lower in the rift was placed between Point A and B to aid access.

Big Drop had only been examined a couple of times in the intervening ten years surely it was worth another probe? The old ladder and a few bridging moves soon led up into the narrow confines of the dig where you were forced to lie on a gravel slope below the solid roof, facing a jumble of rocks and rubble running from somewhere above. Digging was methodical, awkward and taxing; reaching to pull out the larger rocks or scraping the spoil into small heaps with my ice-axe, then arduously dragging and clawing armfuls back from the face before writhing over them so that they could be pushed over the edge with flailing legs. Most of the spoil fell through Point A where Gaz was on hand to maintain its momentum, launching it to tramming level far below, where Brian and Debbie returning from their excursion and thinking about joining us were pinned in the main adit in fear of their lives. Richie at the base of the old ladder was able to warn of larger projectiles and occasionally unblock jams. Inevitably, digging simply resulted in more noisy collapses, necessitating more work. After an hour or so a huge amount of material had been shifted and our energies largely expended, so when yet another wave of rubble fell down from above it was very demoralising, it seemed as though nothing was ever going to change.

The breakthrough....

Cooler air was the first sign, heavier air replacing that warmed by our exertions, the amazing sight of blackness through the rubble soon followed. There was no stopping us now, though it required quite a lot of work to clear and maintain a space sufficient to consider peeping through. Larger rocks appeared to be spanning the gap between two walls of a fissure, with smaller ones hanging precariously, having been undermined.

Utilising the solid walls it was just possible to squeeze through and to stand up, surrounded by tottering rubble from the waist down. The newly revealed workings were big, the fissure widening to become a chamber with a stemple high up and more darkness beyond it. A steep crumbling wall continued to my left but to the right it was more open, ending where a vertical stack of deads rose some 5m to the roof. I was aware of the risks but the temptation to explore was strong. As I clambered higher, bits from the newly exposed spoil faces kept falling and it wasn't unexpected when a section fell in, completely blocking my access tunnel. It was time someone else did some digging anyway!

Whilst Gaz began labouring from below I was able to start stabilizing the spoil from above, scooping precarious rocks back from the edge on the left and removing the rubble which hung on several ledges as testament to the original height of the infill. Eventually the access route was re-established and after Gaz had briefly stood up to admire the discovery we retreated back to the others, resolving to return soon with a drill to scale into the higher darkness.



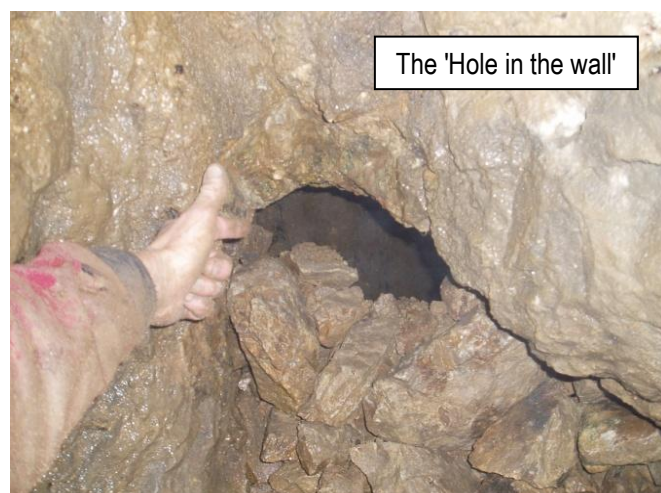
Breakthrough at Big Drop

River of stones....

We were back the following Sunday, Gaz, Richie, Sion and myself. Our dig was totally blocked and it required yet another hour of hard graft to open it up. Once I was finally stood up, I could see why. The vertical wall of deads had completely fallen down to reveal another area of blackness; our drill wouldn't be required because the new slope would be climbable. To stabilize the access hole I started building up a sidewall utilizing an old piece of jammed wood as a base, Gaz meanwhile continued digging below. It was then that I noticed the 'river of stones'. When Gaz removed rocks from underneath, a flow of rubble sped down from the collapsed wall and disappeared down a plug hole running between the larger wedged rocks, simply replacing the material he had extracted. Luckily the plug hole drained the stones before they reached my access hole; nevertheless it was a conveyer belt which needed interrupting. Soon I had constructed a wall of rocks to help dam the flow but it proved of limited value as inevitably it became undermined. With Gaz cursing at the amount of work he was still having to do and muttering something about needing to insert some barrels I decided to explore a little on my own.

Hidden places....

The extremely active spoil slope was largely bridgeable but tying a rope around the large stone pillar at its top, meant it would be easier and safer especially in decent. Discoveries came quickly. In a pleasant rock strewn niche, 'The Nest', it was possible to sit comfortably and talk with ease to Richie at the ladder. Above some large stemples there appeared to be the start of a curving shaft, too vertical to contemplate exploring solo, but a nearby tunnel led steeply into higher workings, 'The Loft', containing some artefacts: several chisels, a pricker and a tin can. Once back down at the stemples a gap was noticed above a small wall of stones, these were quickly removed creating 'The Hole in the Wall' a squeeze through into another large section of workings where a climb up past a wall of spoil led to two parallel passages. This 'Hideout' was a flat floored, dry and comfortable place and I probably wasn't the first to think so. The previous incumbent had tidily placed a scrapper and several chisels on a ledge alongside his shovel, a fine spot to work or down tools and perhaps have a few minutes rest. A passage leading off proved blind, but another short one ended with damp black infill dropping in from above, indicating yet higher workings. The main descending fissure looked too dodgy for free-climbing and anyway it was time to return to Big Drop's access hole where a partial blockage had to be cleared before I was able to drop back through and rejoin the others to discuss the new finds as we made our way out.



Reappraisal....

Two weeks later; November 6th, four large blue barrels, were manhandled into the system by a team five. Pipe, boat, and adit, all presented difficulties but eventually three of the barrels were hoisted to the chamber below Big Drop Dig via the original rift above the electron ladder and stashed into various corners. One barrel was left at tramming level, wedged in the tight, crawling entrance into Rift 3 where rubble partially blocked access. Our exploits above, throwing rocks and spoil down had added to this problem, and despite walling up a section to help alleviate things, a barrel was still needed to help safeguard access.

Whilst bridged out over the electron ladder winching barrels I took the opportunity to investigate a nearby opening running south. It turned out to be a window into Ore Cart Rift, a window which I had previously found from the other direction whilst exploring with Brian in 2005. (Point C) A high ledge led via several tunnels, one with mini windows, to the original abseil route directly above the ore cart.

Big Drop Dig required a little more excavation as there had been further collapses but Dave Flowers and I were soon in River of Stones Chamber dropping large boulders into the plug hole in an attempt to block the flow of stones, a tactic that proved very successful. We then went on a foray into the new system.

Our most significant find was a backdoor route into the 'shaft' just beyond The Hole in the Wall, but we were extremely disappointed to discover it ending in a blind mushroom shaped chamber. We also descended the major fissure leading south from The Hideout as far as a abrupt drop below a rope worn stemple, tossed stones could be heard to fall a considerable distance raising expectation of further discoveries but for that bolting would be required, so we retraced our steps back to the others.

A grand day out....

Three weeks later November 27th, Gaz, Richie and I were back. Placing barrels in the dig was postponed in favour of exploring down from The Hideout past the rope worn stemple. Once in position Gaz's drill sparked into action and a rope was quickly deployed, I elected to go first. An area of workings arrived sooner than anticipated and it was safe to unclip and explore several tunnels which all ended blind. (Surprisingly, I missed an opening at floor level that immediately opened into an immense rift which dropped out of sight a huge distance).



A rope worn stemple

Attaching once more to the rope a short drop led onto sloping rubble and then down into a cleaner section of passageway. Here there was a further hole in the floor through to lower workings. Immediately next to the hole, a step led up into a neat tunnel with a well constructed stone wall running down one side and a kibble on its floor. I was by now off the rope and Gaz and Richie were descending, whilst doing so they spotted the large rift at floor level I had missed on the intermediate level. Meanwhile, I took the opportunity to explore the walled tunnel, unfortunately there was soon a blockage caused by infill running in from the right, either the wall had failed or never been built and squirming past it led immediately to another fall, too tight to pass.

Eventually we were all together and after admiring the wall and kibble, ready for the next part of the adventure. Back on the rope another rappel took me through the continuation hole and past a stemple onto the sloping floor of lower workings and enabled me to carefully approach an ominous looking abyss. Apart from the solid back-wall, the edge consisted of unstable jagged undercut debris, following a collapse sometime in the past. Gaz was soon on hand with his drill inserting two beautifully placed bolts, which allowed a long abseil to be made avoiding the dangerous edges, before

dropping into space to pass some broken rails and eventually arrive on the floor of a rubble strewn chamber, next to a large overhanging wall. It was immediately obvious I had landed at the lowest point of the Ore Cart Rift; an old rope held taut by a rockfall and a picturesque rock window, were familiar landmarks.

Gaz and Richie abseiled in turn, no need to return the way we had come as there was now a simple way to Main Tramming Adit via a cross-cut and down through Rift Two. Our ropes could stay awhile as we expected to be back soon to explore our new discoveries more thoroughly.

Black Grot Dig....

Gaz, Dave Flowers and Richie were back a few weeks later and started to investigate the black infill at the Hideout. It was glutinous and saturated. Progress was messy and slow, filling tubs with the grot whilst prone was difficult, and it refused to drop out of the tubs without scraping. The rewards were some amazing acoustics when collapses occurred, like heavy rainfall, or perhaps a breaking wave, extending upwards to some indeterminable height, getting ever fainter. There were certainly workings up there.

On January 22nd 2012 I accompanied Gaz, Dave Flowers and Richie back to the dig. En route we took some time to insert the barrels into Big Drop. There were a few difficulties but eventually they were secured in place to safeguard future access. We also visited the artefacts in The Loft. Here Richie found a pipe, previously overlooked, with an unusually ornate bowl. I also climbed up to have had a closer look at a small round hole high in the roof, full of large rubble. It looked appealing, but it would have to wait. Black Grot Dig was again attacked with enthusiasm, and the amazing noise of cascading sop continued to intrigue but inevitably we tired. Our efforts didn't seem to be going anywhere fast.

The Moon....

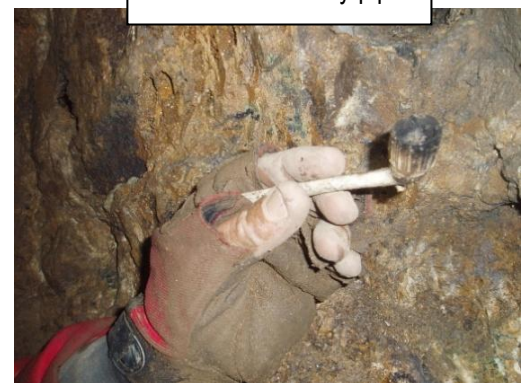
A month later, February 26th, Brian and Ange went exploring elsewhere, whilst Dave Flowers and I returned to The Loft intent on investigating the hole in its roof. With the hole being perfectly circular and somewhat celestial from below and the precarious bridging to reach it beginning at a crescent shaped alcove 'The Moon' seemed a good name for the dig.

A small piece of scaffold pole, brought for the purpose, neatly jammed on the inside of the hole, secured from it with a sling and karabiner I could safely wedge myself in the roof, and concentrate on extracting rocks, throwing them into a minor recess on the floor below.

At first rocks rolled down to replace those removed but increasingly I had to half climb into the hole, reaching further in to acquire rubble. The hollow on the inside of The Moon became increasingly spacious; eventually I squirmed inside and stood up. I was concerned that falling rocks would block the hole, but fortunately two large boulders propped up on one wall provided a protective buffer. It was now a matter of pulling down rocks until the space around my feet was full, then popping back down through the hole to throw them into the chamber below, before climbing back up to repeat the process. (Just throwing the rocks out wasn't accurate enough, errant rocks rolling down to the 'Nest' destroying stemles en-route or worse, falling to the barrels blocking access).



Richie and the clay pipe



First Terminator....

All the drill holes in The Moon had been made from above, and the spoil had obviously been thrown in from above, so there had to be higher workings. After a while the rubble slope appeared stable and a reasonable space led, through a tighter section, up to a solid roof some 4m away. Cautiously I climbed up higher, eager to discover what we had unearthed. There was a crumbling edge in front giving me some concern, but it was the torrent of rocks suddenly falling in from the side 'like a cement wagon pouring' that stopped me in my tracks, they jammed up in the tight section immediately below my feet and blocked me in! Quickly I kicked a gap through, it proved too small. As I attempted to drop through, my torso became wedged and the rest of the pouring rubble packed in on top of me. It was noisy and increasingly heavy. Only my legs were free, my light shone through a mask of rocks, I was thankful for my helmet.

Luckily I could communicate with Dave Flowers, who was able to climb up to rescue me. This proved easier than anticipated; a minute of excavating under my hips and the rubble slid away from my left arm allowing me to exhumate myself from the 'First Terminator'. Needless to say I was a bit shaken and didn't fancy doing anymore, however my misfortune wasn't finished; whilst in The Loft a fist sized rock rolled out of The Moon landing on my shoulder blade. Ouch!

More of the same....

On the 15th of April we were back; Gaz, Richie, Dave Flowers and myself, together with Brian, who squeezed through the barrels to visit our new area for the first time. The Moon was the focus, and I continued to empty it of rocks whilst tied to the scaffold pole with numerous excursions to its higher reaches, dislodging rocks to jump back through the hole when significant rock-fall threatened. All but my left arm would make it safety, resulting in some interesting bruises later in the week. Extracted rocks were thrown onto the main floor of The Loft and packed into a minor tunnel at the end by Dave and Brian during cease-fires. (Gaz and Richie meanwhile were emptying a passage just beyond the Hole in the Wall, which was to become known as Gaz's Dig).



Brian's first climb through the barrels

On this trip to The Moon I decided not to risk climbing up too far, I was more cautious, content to spend more time opening up the dig. We left hoping that any tottering rubble out of sight around the corner would have stabilized by our next visit, making exploring safer. We left confident that substantial discoveries were close at hand.

Second Terminator....

There were four more visits in 2012. Ladders were added to ease the approach to, and through the barrels, and both The Moon and Gaz's Dig continued to be probed. June 10th was especially memorable in that I got myself trapped once again, this time higher in the Moon Dig at the 'Second Terminator'. Mercifully Gaz was on hand to pull me out. But the digging that day had revealed an open space above, with a stone wall and a stemple below wooden shuttering supporting deads. We were still optimistic of a breakthrough but continued slumping, whenever we dug, was preventing safe access.



Open space with stone wall, stemple and wooden shuttering.

The Penmorfa Chronicles

2013: 'Over the Moon' and beyond

Bags and brawn....

There were several return visits in the early months of 2013. They involved the filling of sandbags to create hoppers for spoil from both The Moon and Gaz's Dig. Immediately above the barrels, sandbags were used to make a series of easy steps leading to the hoppers. The Hole in the Wall was eventually blocked with fill and an alternative route created over the top via The Mushroom. Here, a rod of encrusted rocks was cleaned up to reveal a fabulously preserved chisel.



Well preserved chisel

It finally became apparent that the two digs were merging and that Gaz's Dig was adding to The Moon's instability, so it was abandoned. Eventually The Moon was opened up again and Gaz and I squeezed through, to finally stand in Over the Moon Chamber (March 3rd). The fine stone wall observed previously was gone; its demise, and the flow of the rubble it had held back, no doubt responsible for the persistent slumping that had caused us so much additional digging. Above was the blackness of another large chamber impossible to reach without disturbing the very fragile looking column of deads stacked above the stemple and shuttering. If it collapsed we would be stuck! The sides of the chamber were heavy with creeping rubble, we cleaned some bits up, but things were rather uncertain. Gaz made use of his drill to place a bolt, the first of several that might be needed to climb to the higher level and we beat a hasty retreat.



The stone wall had gone

24th March, a day of moving ladders in preparation of the push into higher areas above The Moon Dig. Two long ladders, one of heavy steel, were taken into Penmorfa. The heavily laden boat trip was especially memorable with Richie and Brian positioned nervously afloat, the ladders laid diagonally across them, whilst I pushed. The steel ladder was thankfully left at the talley-board, too heavy to take further; the aluminium one was dragged up into Rift Three and hauled through the obscure window into the Ore Cart Chamber. From here it was taken up via the abseil escape route and left in a narrow cleft through which it wouldn't fit, below The Hideout's rope worn stemple. But it would at least allow easier access in the future.



A day of moving ladders

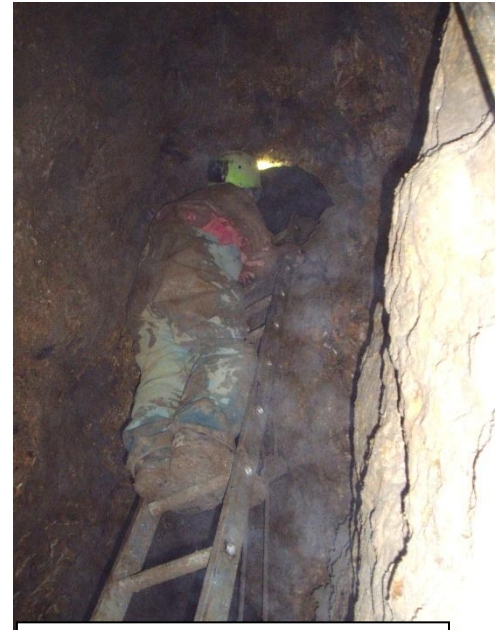
Two smaller ladders collected from elsewhere in the system were also pulled up the abseil rope and, using the newly jammed ladder, taken to The Hideout and on to The Moon Dig. Predictably the dig was again blocked at the 'Second Terminator' hiding Over the Moon Chamber the high point reached on March 3rd, but we expected this would probably only take a few minutes to unblock and, with the ladders in position, we were increasingly hopeful of reaching new workings.

Where Are We Now? Chamber....

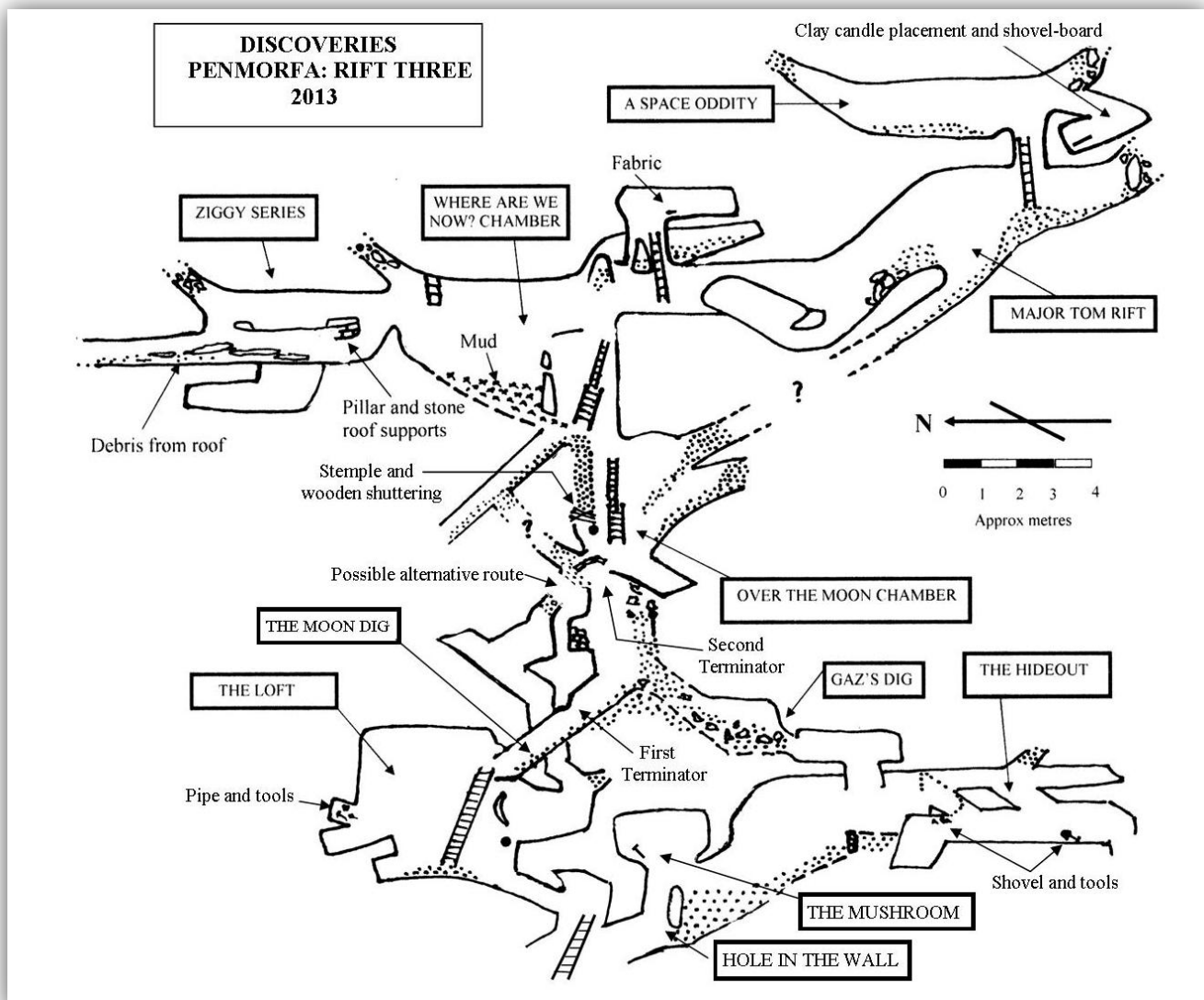
Two months later on May 26th Richie Gaz and I were back and those hopes were realized. An initial victory was managing to manipulate that long ladder, left jammed below The Hideout, through to The Loft where it greatly simplified access into The Moon Dig

Here, only a little digging was required to re-enter Over the Moon Chamber. Two of the small ladders were then tied together allowing me to climb up into the mysterious blackness, 'Where are we now?' asked Gaz and the new chamber acquired its name. (David Bowie's reflective dirge was in the charts). Whilst Gaz stayed below controlling slumping with sandbags, and Richie remaining even lower down in case he failed, I went to find out.

To the north across a muddy section, was a passageway reminiscent of the Ali Series with a pillar and some walling holding up the roof. Across roof debris on the floor was a constricted continuation, left unexplored. This area (the Ziggy Series) had several clefts where rocks were falling in from above.



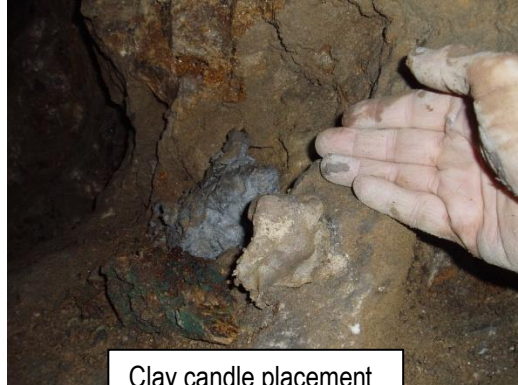
The Moon Dig's new access ladder



I then pulled up the two tied ladders and placed them so as to access the passageway running south. Here was a window through to a side-passage with its hanging deads and next to it, a climb (reached by using yet



fragile fabric



Clay candle placement



shovel-board

another short ladder we had waiting at The Moon Dig) to blind workings containing a fragile piece of 'string vest' type fabric (bag?). Further south, was the more spacious Major Tom Rift, with large boulders infilling at its far end. Moving the ladder allowed entry to A Space Oddity; workings with more infill at each end and a small blind side passage containing a clay candle placement and a wooden shovel-board. A crawl leading down from Major Tom Rift looked to be heading back towards Over the Moon Chamber.

It was a substantial new area, with potential for finding even more, as several places seemed to offer easy digging with room for storing extracted material.

Too long....

On June 2nd Brian Ange and I had the opportunity to consolidate our recent advances in Rift Three with some useful jobs. Three short scaffold poles were transported in and taken up through the system for future use in protecting access into Over the Moon Chamber and sandbags were used to create steps up the awkwardly steep slope above the horizontal ladder.

My memorable event was hauling the long steel ladder which had lain near to the tally-board for some time, up through Rift Three to replace the inadequately short ladder immediately below the barrel area. The ladder was not only heavy but inordinately long and had to be hack-sawed shorter at one tight bend on its journey. Eventually it was in place on Brian's carefully constructed footing.

Using the new ladder made reaching the barrels a delight but squirming through them was no less taxing! The infamous Moon Dig was found to be still open, and the scaffold poles were left nearby. It was Ange's first trip above the barrels, showing her around our discoveries, admiring the various artefacts and of course doing a little digging to tidy up here and there, took longer than anticipated; Brian was getting worried when we popped back down through the barrels. It was 3:45!



Ange admires the pipe

Mad but friendly....

On Jun 30th Gaz, Richie and Dave Flowers climbed through The Moon Dig and GOES's new drill was used to place 7 bolts to safeguard access into Where Are We Now? Chamber by re-hanging the established ladders, and adding a higher one to entirely avoid the loose spoil. They also installed numerous safety lines. The Ziggy Series was explored but they found nothing new.

In the meantime I was taking my daughter Elin, on her first tour of the system; Pinnacle Chamber, an abseil down the 'Internal Shaft', (Cover picture) the 2001 Trammig Level and then up Rift Three to visit the others. Whilst waiting for

them to finish their work above, I entertained her by tossing yet more mud from The Moon Dig. She had a great time, especially liking the boat and the barrels and thought the whole place was straight out of The Hobbit, all the inhabitants were friendly, if a little mad. An astute observation that was difficult to argue against.

Looking and finding....

On July 7th, partly due to computer failure, only Brian and I arrived at West Shore. We decided to look at a potential new link to by- pass the unstable Moon Dig. Currently this dig represents the only way into and more importantly out of the recently discovered area above. A second route would be good and a voice connection had already been detected.

In the event we did several things. The potential new link was promising from below and looked easy digging. Unfortunately The Moon Dig was blocked yet again by a fresh fall, highlighting its instability, so it was impossible to search for the new connection from above. The majority of the fresh fall was eventually cleared but as there were only two of us, it was prudent not to climb up too far, so I was unable to assess where exactly the fallen material had come from and whether the squeeze into Over the Moon Chamber was blocked or not. There's always another day and besides, whilst digging, Gaz's long lost ratchet spanner had come to light so we were well satisfied with our efforts. I sent him the happy face picture to celebrate.



Boat and madmen



Out to grass

The future....

On September 1st Gaz, Richie and Brian reported that The Moon Dig was open and that everything in the area appeared to have stabilised. There is increasing confidence that the higher areas can now be reached safely, but further precautionary measures are still planned for the squeeze into Over the Moon Chamber where lots of clamps have been left prior to the construction of a protective framework of scaffold poles and sandbags.

During their visit a hole was cut through the back of the highest vertical barrel and the surrounding rubble removed to facilitate the transportation of longer scaffold poles which previously hadn't been able to pass through the right-hand bend. Hopefully it will also alleviate the arduous climb up out of the barrels for those less energetic.

Everything will soon be set up for acquiring safe and easy access to the newly opened up 'Bowie' workings. Assuming gravity doesn't intervene too much, parties are likely to be exploring and digging in this higher area searching for regions of Penmorfa that still remain hidden. Good photographs of our discoveries have yet to be taken. To help keep track of developments a proper survey needs to be undertaken and the height gained from tramming level calculated. Connecting through to Pyllau or into Lower Treweek's workings is still a distant dream but accurate measurements might help it become a reality.

Dave Wrennall 2011-13

Llandudno Victorian Extravaganza 2014

GOES held an exhibition for the Extravaganza on Saturday and Sunday 3rd & 4th May at the Ty Gwyn Mine, which was well received and supported by the Society. Two members dressed as the Mine Owner and Foreman Miner which proved a hit with the visitors and will be repeated next year. Lots of interest was expressed for GOES and its organized walks resulting in several new members. A big thank you to all those who assisted without whom it could not have been done

Stephen Lea

Mine Owner and Foreman Miner (Nick and Steve)



The Caving Code:

1. Get the basic gear: Helmet, lamp, warm clothing, spare lighting, insurance.
2. Always get permission from the owner: If in doubt, ask the local group; always leave the site secure and follow the 'country code', close the gates.
3. Tell someone where you are going. How many, which mine and where, time in, out and home-contact; if overdue contact **CAVE RESCUE 999**.
4. Never go underground alone or intoxicated: The minimum number is four, one to stay with the casualty and two to go for help. Alcohol or drugs in you, or one of the group, compromises the safety of the entire group.
5. Do not exceed your capability: Do not over estimate your skills and endurance; and remember it is always more difficult coming out against gravity.
6. Do not get lost: Take a reliable plan or guide from the local group.
7. Never climb on mine ladders or machinery: If it is rotten you will not defy gravity for long, but you will accelerate at 32ft/sec/sec.
8. Never climb on stacked or dead walls: They may collapse around you like a house of cards; take care.
9. Never fool around underground. It might be the last thing you do for yourself or your mate(s), or they do for you.
10. Do not spoil the mine environment: Take your rubbish home, leave artefacts in situ, leave bats and other flora/fauna alone. Do not smoke.
11. Know your emergency self-help drills: Don't panic; apply first aid to save life (bleeding, breathing, consciousness) prevent deterioration (shock, hypothermia) and promote recovery (reassurance, and go easy on the gallows humour); stay with the casualty while two of you go for help.
12. Access to the mines on the Great Orme is controlled, but is available to caving groups or individuals via the **Great Orme Exploration Society Ltd**. Arrangements for guided access can be made with the Society Secretary.
13. **TAKE** only photographs, **LEAVE** only footprints, **KILL** only time.